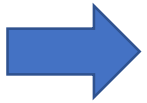
Correlations

No correlations in error calc.

Asymmetry	Current	Multi-Bin
Track	3.43±0.55 (16%)	4.47±0.70 (16%)
Shower	5.04±0.40 (7.8%)	5.94±0.39 (6.5%)
Combined	6.10±0.45 (7.4%)	7.43±0.52 (7.0%)



Correlations between NO and IO taken into account:

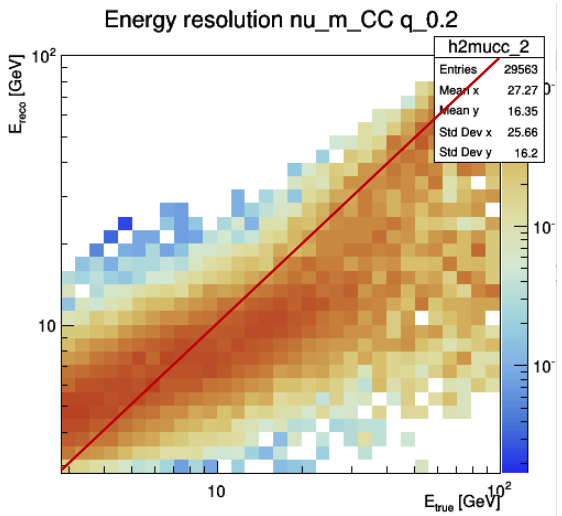
$$A_{ij} = \frac{N_{ij}^{NO} - N_{ij}^{IO}}{\sqrt{N_{ij}^{NO}}}$$

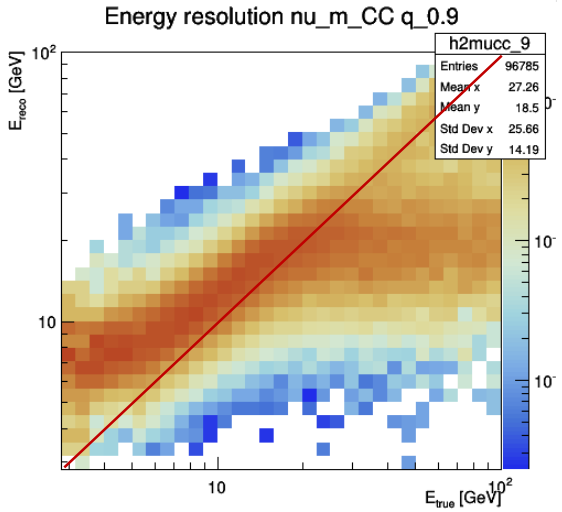
Asymmetry	Current	Multi-Bin
Track	3.43±0.021 (0.61%)	4.47±0.21 (4.5%)
Shower	5.04±0.00 24 (0.047%)	5.94±0.0062 (0.11%)
Combined	**6.10±0.012 (0.20%)**	**7.43±0.12 (1.7%)**

Correlations between bins ignored for now

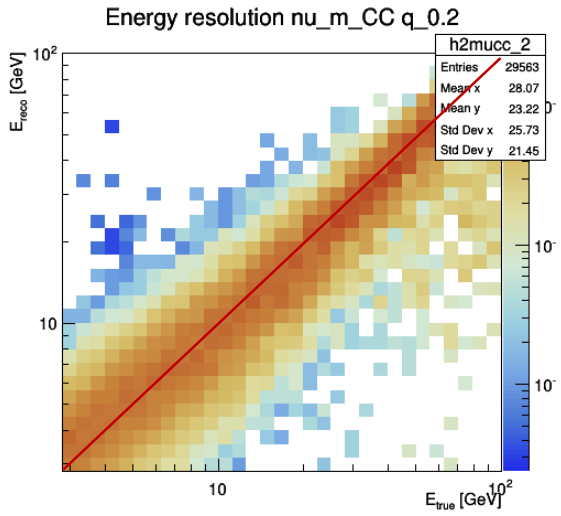
Energy resolution mu_CC

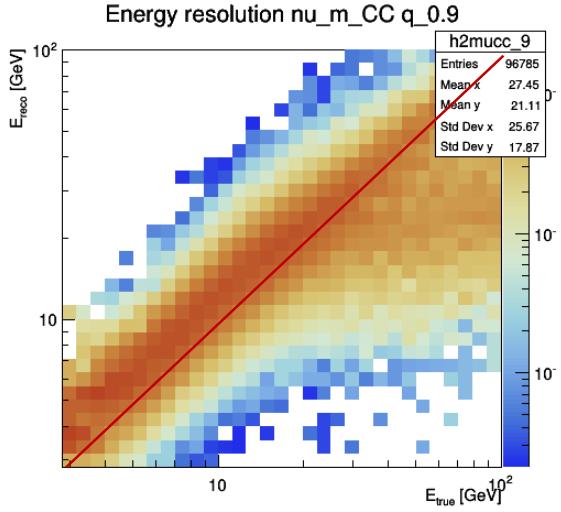
Track energy





Shower energy

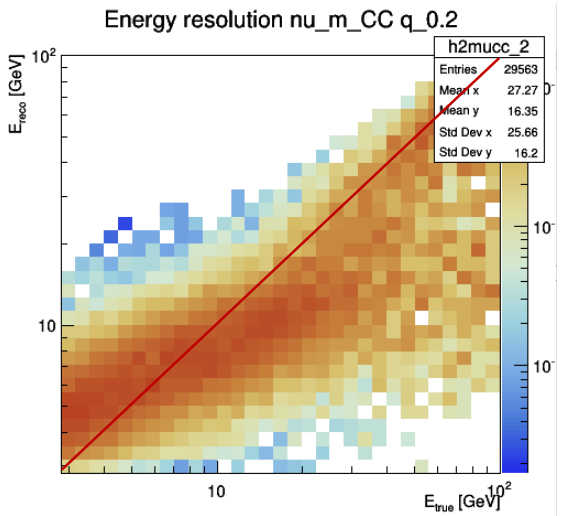


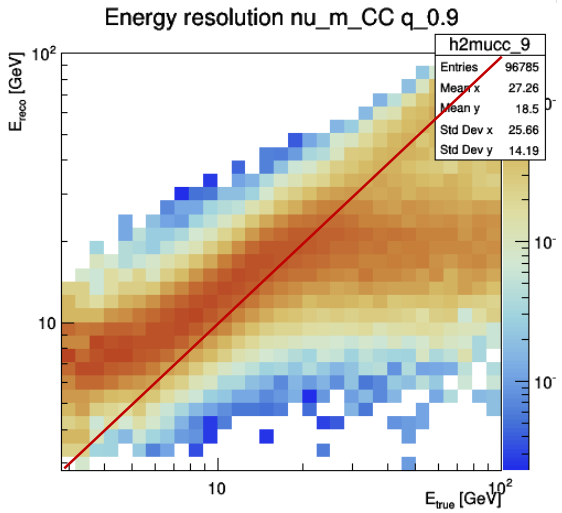


Energy resolution mu_CC

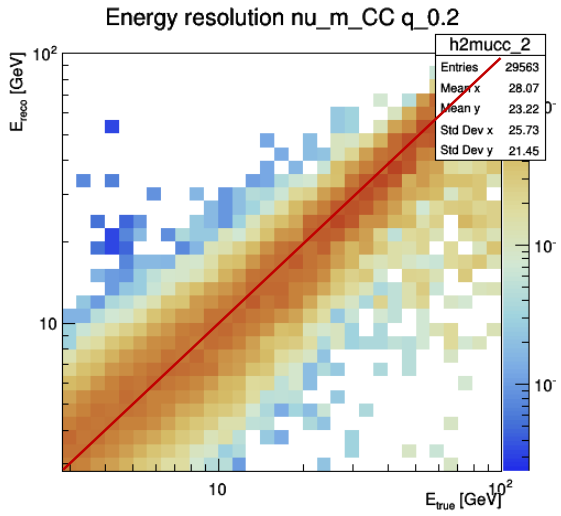
Use shower if available, else track

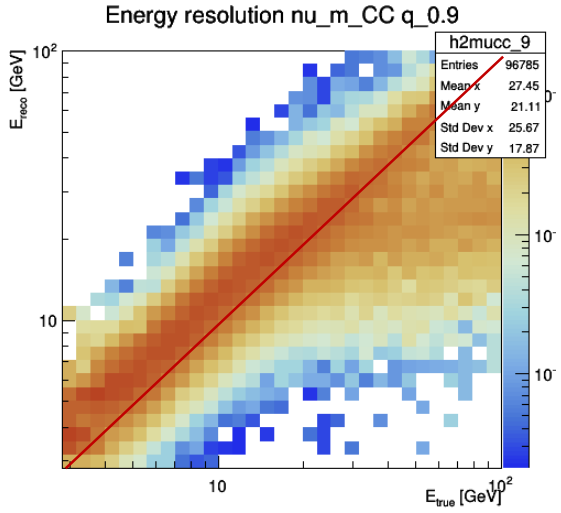
Track energy



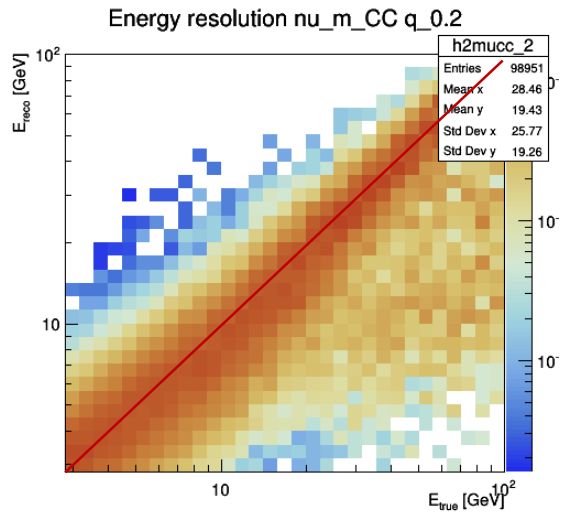


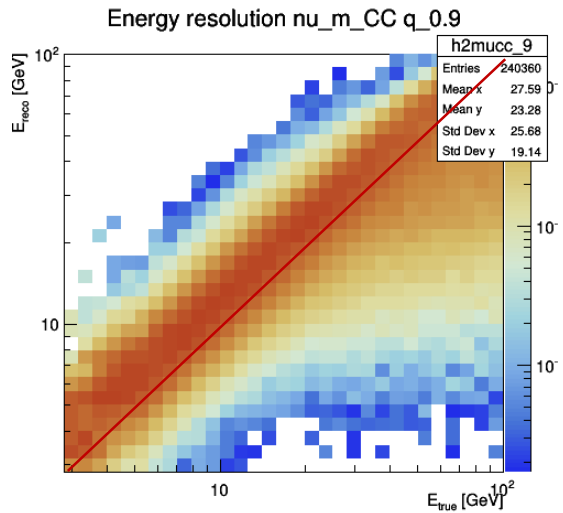
Shower energy





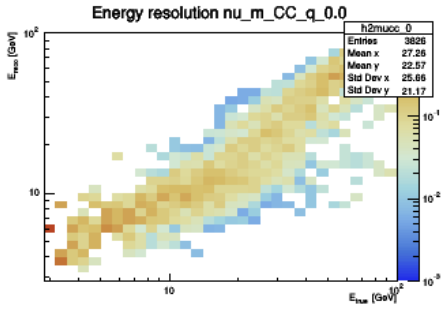
Combination energy

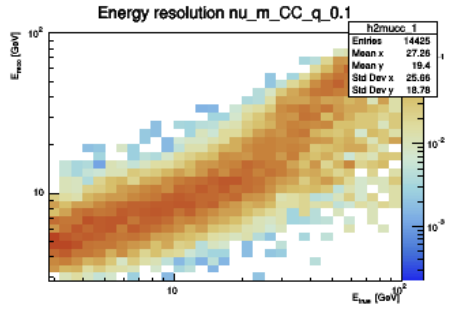


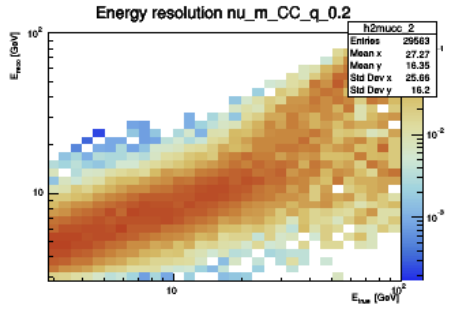


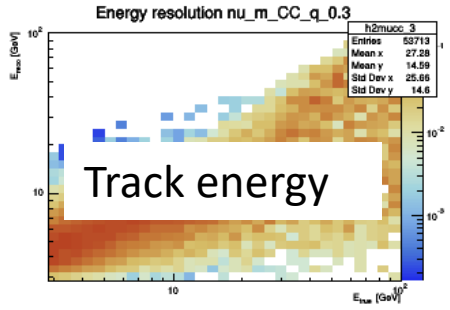
Backup

Mu and tau

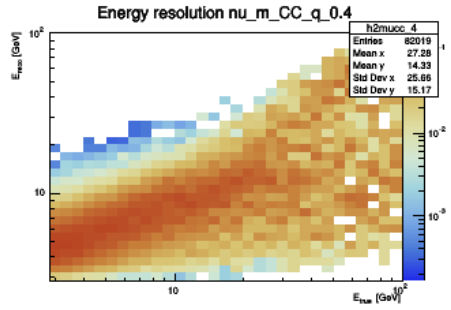


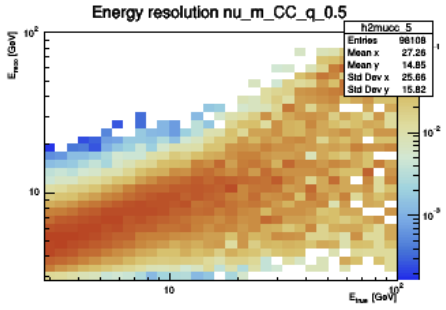


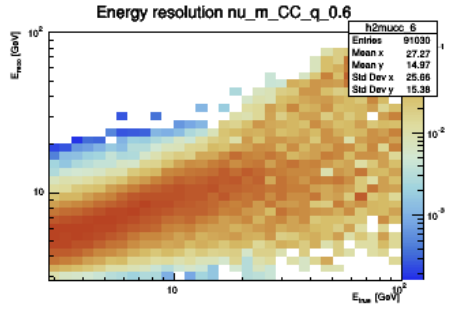


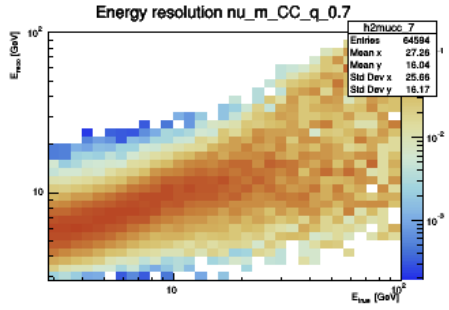


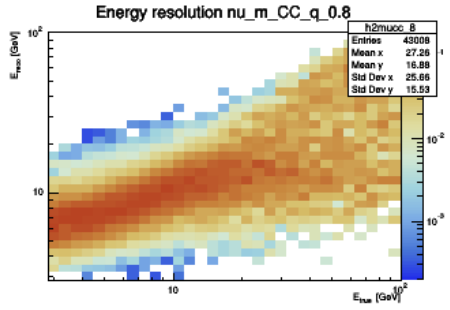
Track energy

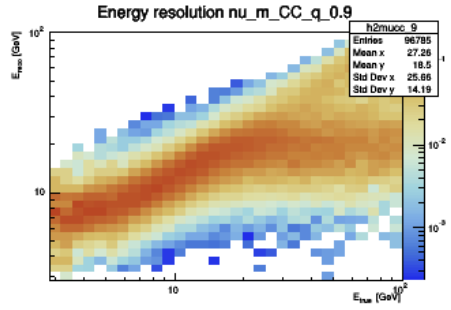


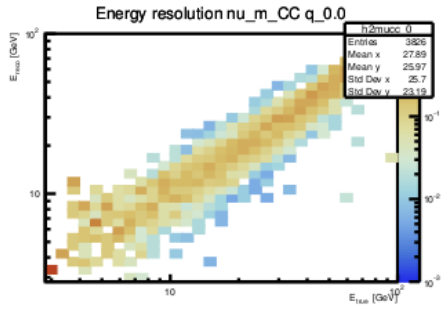


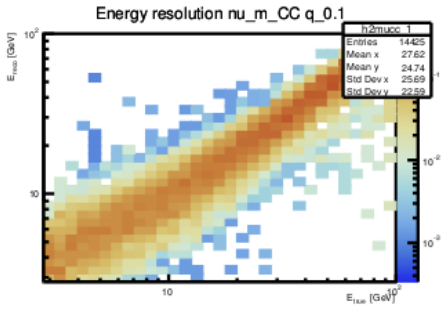


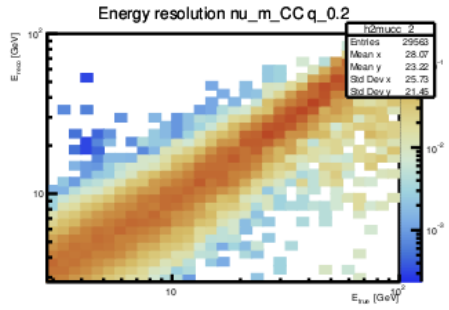


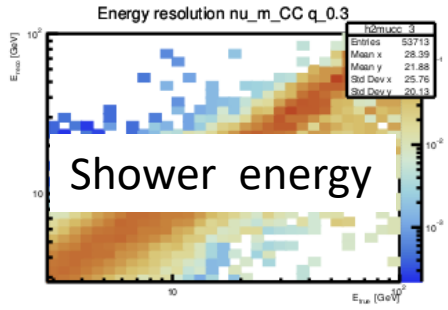




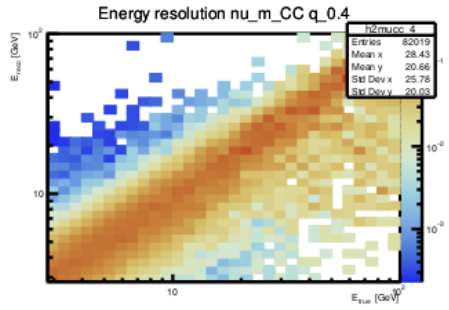


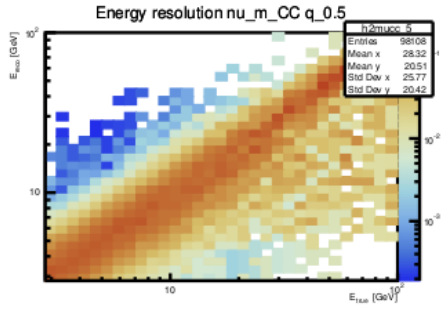


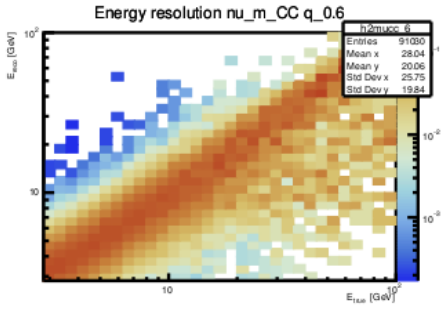


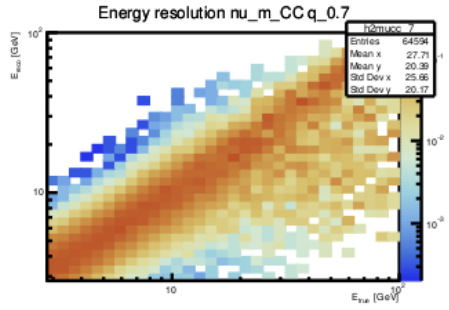


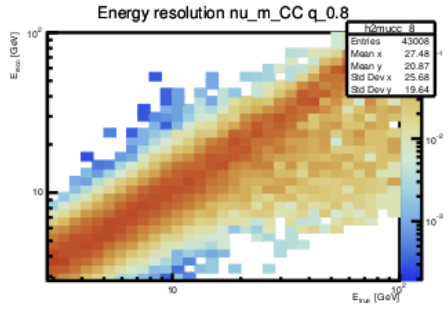
Shower energy

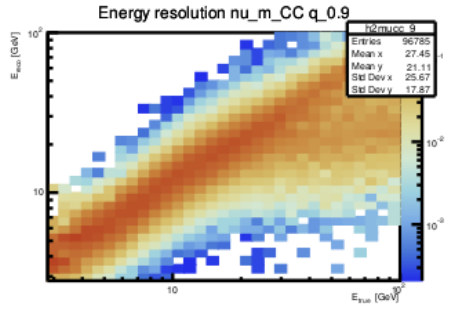






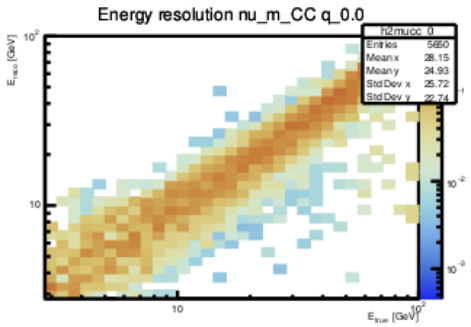


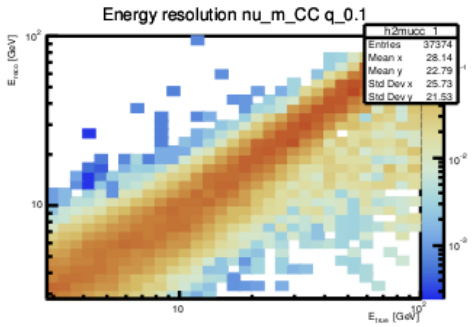


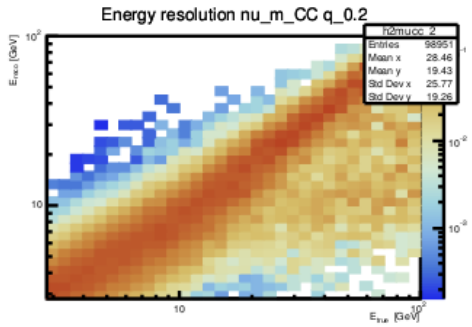


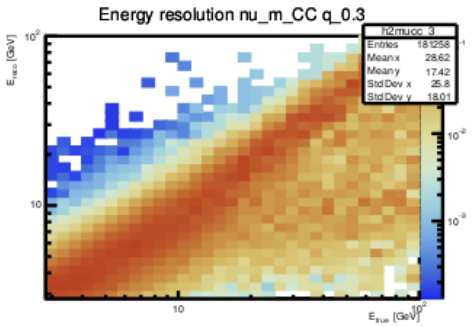
Energy resolution mu_CC with hybrid energies

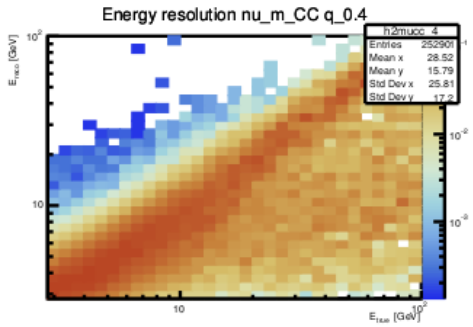
- Use the shower energy
- If there is no shower energy due to misreconstruction: use track energy

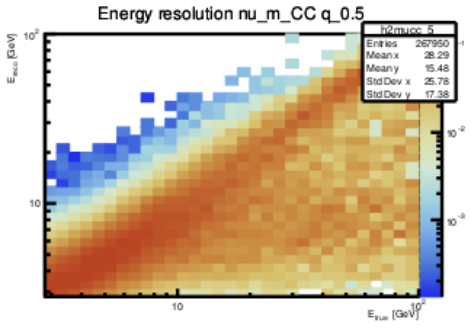


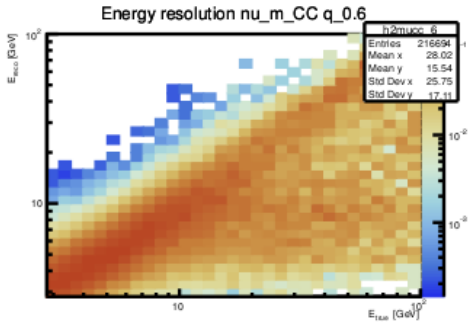


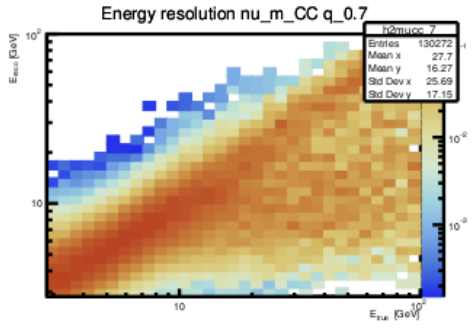


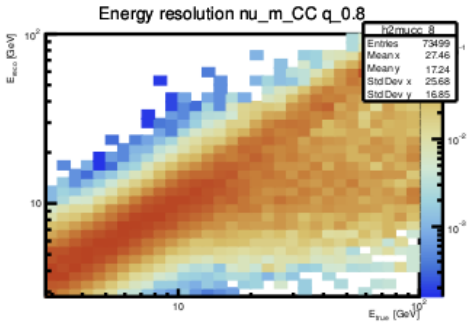


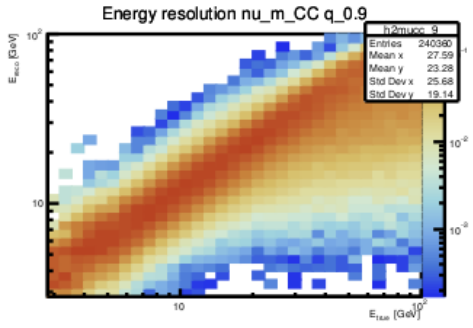






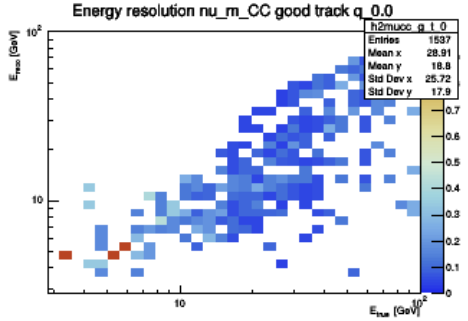


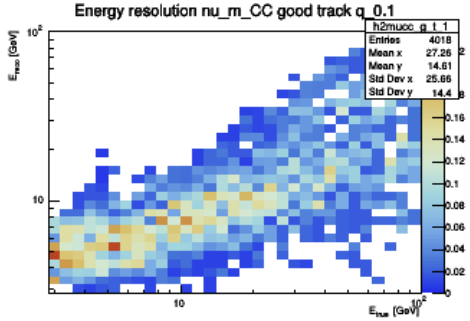


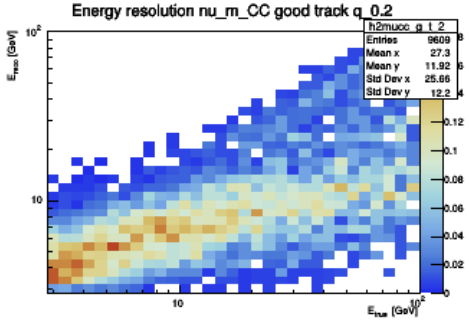


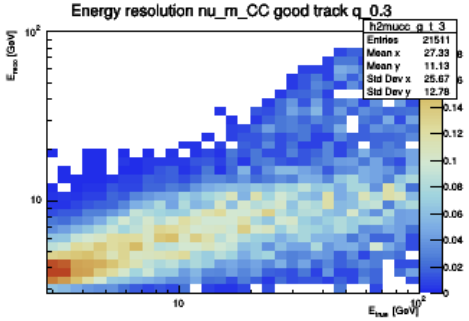
Energy resolution mu_CC with only good tracks

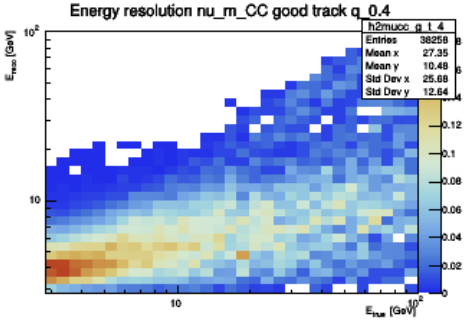
Good track: track_ql0 == 1, track_ql1 == 1
Good showers are explicitly excluded (shower_ql0 == 1, shower_ql1 == 1)

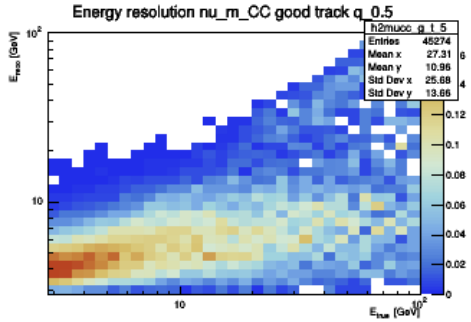


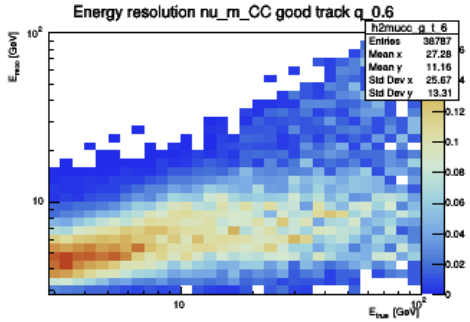


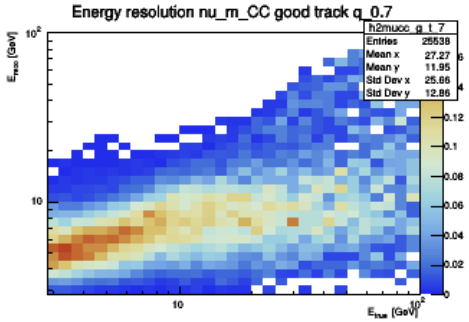


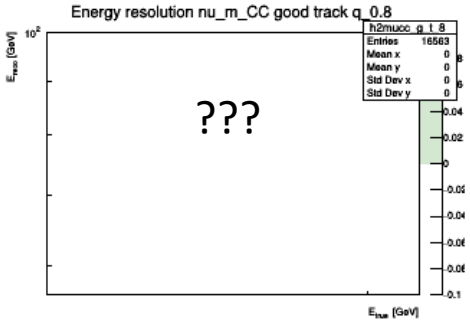


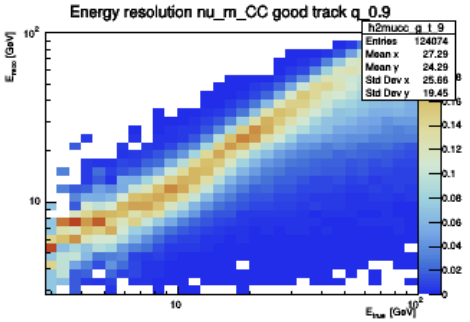












Energy resolution mu_CC with hybrid: track then shower

- Use the track energy
- If there is no track energy due to misreconstruction: use shower energy